19. How to find depth first and breath first search path of a given graph? Narrate with appropriate algorithm.

20. Briefly explain the open addressing with proper example.

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NOVEMBER/DECEMBER 2025

23UCS21/23USC21 — DATA STRUCTURES AND ALGORITHM

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions

1. Define Linked List.

2. How the linked list differs from array?

3. What is Stack? Mention its ADT.

4. Compare Queue with Circular Queue.

5. When the expression tree will use?

6. Write an algorithm for post order traversal.

7. Define Adjacency Matrix.

8. Is there any difference between DFS and BFS? Justify.

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9. How the binary search is differed from Linear Search?

10. In what way choose a hash function?

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

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11. (a) Demonstrate the creation and traverse operation on doubly linked list.

Or

(b) Mention the insertion and deletion at first and Last position in circular Linked List.

12. (a) How to implement a queue in a linked list? Explain.

Or

(b) Evaluate the following expression by using Stack. ((4+8)(6-5))/((3 -2)(2+2)).

13. (a) Briefly explain about applications of trees.

Or

(b) What is ADT binary search tree? How to perform insertion on it?

14. (a) How to perform Adjacency List of a directed Graph? Explain.

Or

(b) Define and explain Adjacency Matrix? How it differs from weighted matrix?

15. (a) Sort the following numbers using Selection Sort and also explain the solution with appropriate algorithm. 65,70,75,80,85,60,55,50,45.

Or

(b) What is extendible hashing? Explain.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Demonstrate the polynomial addition with appropriate algorithm.

17. How to perform insertion and deletion in a circular queue? Explain

18. What is traversal? Explain various tree traversal technique with appropriate algorithm?